The Implications of Growing Wealth Inequality for Entrepreneurship among Older Households

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Contents

Introduction

Older households have faced increasing economic pressures during the past three decades, especially through rising financial risks such as growing indebtedness, and growing labor market risks such as longer unemployment spells. These economic pressures have lowered the retirement preparedness of those households nearing retirement (Munnell, Webb & Golub-Sass, 2012). Older households may consequently look at options to work longer, so as to increase their retirement preparedness. However, some of the phenomena that create economic pressures, especially longer unemployment spells, could potentially stand in the way of older households working longer in wage and salary employment. Thus, self-employment may offer a promising alternative path for older households who are facing lowered retirement preparedness.

There is already some evidence that older households increasingly move into self-employment. Kevin Cahill, Michael Giandrea and Joseph Quinn (2013), for instance, identify a growing trend of older workers moving out of what they call career employment – extended periods of wage and salary employment – into self-employment. And, Dane Stangler (2009) from the Kaufmann Foundation concludes that entrepreneurship has been more prevalent (more start-ups) among older households than among younger ones, countering a long-time trend in the other direction. Still, more confirmation is necessary because these data reflect raw counts of entrepreneurship, not in its comparison to either total population growth or other employment arrangements.

Within that broader context, there are three unaddressed gaps in the literature related to older households' self-employment. First, it is unclear from looking at employment flows whether the share of older households in self-employment arrangements has also gone up. Cahill, Giandrea and Quinn's (2013) data, for example, also show the number of self-employed older workers moving back into career employment. The net effect on older self-employment is not clear. Second, it is unclear whether self-employment, either as entrepreneurship or independent contracting, has grown faster among older households than has wage and salary employment. Third, the factors associated with an increasing movement into self-employment among older workers are understudied. The growing trend of older workers moving into self-employment is often interpreted as evidence of older households responding to economic pressures. It is, however, entirely possible that rather than being driven by need, some older households have seen a rise in opportunities for self-employment, for instance in the form of increasing wealth, which can be used to support the creation and growth of an enterprise.

Consequently, in this paper we focus on the factors associated with two forms of self-employment – entrepreneurship and independent contracting – among older households. In particular we focus on the share of entrepreneurs and independent contractors overall, not their movement into self-employment, to understand whether self-employment has grown in a sustained fashion and if so, which form this growth has taken. And, we consider a wide range of factors associated with older self-employment to understand whether push factors reflecting increasing economic factors or pull factors indicating growing self-employment opportunities are more likely to be associated with older self-employment.

Our research contributes to the existing literature on older self-employment in several important ways. First, we analyze trends in the stock of self-employment to see whether previous studies that identified a rising movement into self-employment actually contributed to an increase in sustained self-employment among older households. Our research finds a growing trend in older self-employment. Second, we refine previous studies by distinguishing between entrepreneurs who run a sizeable business, and independent contractors. Our findings suggest that the growth in older self-employment from 1989 to 2013 was solely caused by the increase in entrepreneurship, not from independent contracting. Third, we take a closer look at the pull and push factors associated with the growth in older entrepreneurship. Our analysis indicates

that older entrepreneurship has grown because older households enjoyed more opportunities for entrepreneurial activities, largely as a result of rising household wealth in the preceding periods, rather than as a result of growing economic pressures.

Our analyses have direct policy implications. Policymakers interested in making self-employment an attractive alternative for older households facing growing economic pressures, will need to actively create more entrepreneurial opportunities. This seems to especially true in an environment where household wealth is increasingly unequally distributed, and where median marketable household wealth among older households has barely kept pace with income over the most recent years.

Literature review

Entrepreneurship may be an especially relevant employment arrangement for older households as they may face obstacles to wage and salary employment and as self-employment, especially in the form of entrepreneurship offers potentially greater rewards and risks than independent contracting.

Economic pressures on older households create need to work longer in self-employment

Several long-standing trends have raised the need for households to save more, possibly by working longer. Households will need more wealth today than in the past to enjoy the same economic security enjoyed by households in earlier periods. People can expect to live longer and spend more time in retirement than previous generations, requiring more household wealth than in the past to maintain the same standard of living in retirement. And, households face more labor market weaknesses and have fewer employer-sponsored benefits. Households will have to save more than in the past to compensate for those additional risks if they want to maintain their standard of living over time.

An aging society requires an increasing amount of private savings. And, workers retiring now can expect to live longer than previous generations. The Social Security Administration reports that the life expectancy for men at age 65 was 14.0 years in 1980 and 17.5 years in 2010, and the life expectancy for women at age 65 was 18.4 years in 1980 and 19.9 years in 2010. The life expectancy for men reaching age 65 in 2030 is projected to go up to 19.2 years and for women reaching age 65 in 2030 is projected to increase to 21.1 years.[1] The additional years can also translate into longer expected retirements since working longer is often not a viable option for many older workers.[2] Households thus need more private savings than in the past to keep their incomes steady over longer life spans.

But, traditional sources of retirement benefits – Social Security and defined benefit (DB) pensions – have been declining relative to pre-retirement earnings. Scheduled increases in the normal retirement age, which constitute a reduction in Social Security benefits relative to pre-retirement earnings, started to impact people turning 62 in 2000 (specifically, benefits as a percentage of the Social Security primary insurance amount (PIA) for 62 year-olds, fell from 80 percent in 1999 to 79 percent in 2000 and will decline until reaching 70 percent of PIA for those born after 1960). Likewise, the share of private sector workers with a DB pension has fallen over time.

Moreover, the share of jobs with health insurance and employer sponsored retirement plans has eroded over time, which again may increase employees' incentives to find income opportunities other than wage

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[1] Social Security Administration (2011) Table V.A3 – Period Life Expectancy.
[2] Quinn (1980) highlights the importance of good health among older entrepreneurs in fostering self-employment.

and salary employment.[3] By 2010, the share of people with employer-sponsored health insurance had fallen to its lowest level on record. In particular, the share of people with employer-sponsored health insurance, stood above sixty percent in the late 1980s and grew to a peak of 65.1 in 2000; however, since then the number of people enjoying that benefit has continuously fallen, reaching its lowest point on record in 2010, at 55.1 percent.[4,5]

The pattern looks similar for retirement plans, both DB pensions and DC plans. The share of all workers who participated in a retirement plan through their employers, fell from 46 percent in 1979 to 42 percent in 1988; in 2009 it stood at 45 percent.[6]

In addition to this, over the past three decades employees have been facing increased insecurity in the labor market. Likewise, high long-term unemployment is another reflection of the growing labor market insecurity of American families. Long-term unemployment has been on the rise since the 1970s (Rothstein, 2011) and it has been especially pronounced among older households (Rix, 2014).

Households are increasingly ill prepared for retirement because of these varying economic pressures. The share of households, who are expected to be unable to maintain their standard of living in retirement with income from Social Security, DB pensions and private savings, has gradually increased over time, regardless of the methodology used to define retirement income adequacy (Weller & Madland, 2014).

For all these reasons, there are incentives for older households to generate more income. Working longer may be one way to compensate for the growing economic pressures; unfortunately, opportunities to work longer in wage-and-salary employment may be limited, for many of the reasons stated. Thus as a result, we might expect to see older workers looking into self-employment. Cahill, Giandrea and Quinn (2013), for instance, show a growing movement of older workers out of career employment into self-employment. And, Stangler (2009) finds that entrepreneurship has been more prevalent among older households than among younger ones. It is unclear, however, whether the self-employment growth among older households is a sustained trend and whether such a growth holds for both entrepreneurs and independent contractors. These are one set of issues we examine in our study.

Factors potentially related to self-employment growth among older households

To determine that functional cause of increased self-employment among older households, we have to rule out the possibility that these changes are simply a matter of changing demographics. In addition, we have to examine whether self-employment are caused by rising economic pressure (pull) or from great entrepreneurial opportunities (push). We explain these and other factors next.

First, older self-employment could simply be the result of a change in the composition of the older population. That is, the share of households that typically have higher propensities to be entrepreneurs than their counterparts, may be increasing. For example, several studies find that non-whites and

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[3] See also Schmitt, J. (2007) for a discussion of job quality and detailed year-by-year data based on the Bureau of Labor Statistics' March Current Population Survey.

[4] Data from the U.S. Census (2011).

[5] These data ignore changes in the quality of health insurance coverage. The insured face growing co-pays for health care services as well as rising shares of health insurance premiums. See, for instance, Kaiser Family Foundation, 2011, for details on changes in participation insurance coverage, co-pays, and co-insurance payments.

[6] Data from Employee Benefits Research Institute (2010). Other data sources such as the Bureau of Labor Statistics' Current Population Survey show similar patterns, with increases in retirement plan participation in the late 1990s and declines in the 2000s, although the majority of workers typically do not participate in an employer-sponsored retirement plan at work during any given year.

Hispanics have a higher rate of entrepreneurship than non-Hispanic whites (Biggs and Springstead 2008; Lofstrom, Parker, and Bates 2012; Fairlie 2012); if so, the faster growth of older entrepreneurship over time may be due to increasing ethic diversity in the U.S. The changing population composition could thus explain the relative increase of entrepreneurs in the older population.

A similar possibility is that single women, whose share among older households has grown rapidly, might be more likely to be entrepreneurs than men. If so, these trends would explain growing entrepreneurship amongst older Americans. It turns out that women make up slightly more than half all self-employed; further, women-owned businesses are typically smaller than businesses owned by men (U.S. Department of Commerce, 2010). Separately, there is no a priori reason to believe that the rise of single female-headed households among older households contributed to faster entrepreneurship growth.

Another possible reason may the rising educational attainment of older households.[7] More highly educated older households may be more likely to become entrepreneurs compared to other employment arrangements. That is, as educational attainment increases, entrepreneurship should rise faster than other employment arrangements. If so we would expect to see a growing share of entrepreneurs with college degrees.

In contrast to these demographic explanations, it is possible that growing economic opportunities for self-employment are the reason for increasing older self-employment. For instance, over time it may have become easier to finance the start-up of a business. This would encourage entrepreneurs start and grow their business, and it would allow independent contractors to more easily to overcome liquidity constraints, e.g. in response to short-term income fluctuations. The U.S. credit markets experienced a wave of financial deregulation in the 1990s, culminating in the Gramm-Leach-Bliley Act of 1999. Financial deregulation has generally contributed to greater financial market concentration, but without any noticeable adverse effect on smaller businesses. And, financial market deregulation increased the availability of credit to all borrowers, while often lowering the costs to borrow (Black & Strahan, 2002), at least before the onset of the financial crisis in 2007. Older households may especially benefit from lower credit constraints since they have longer credit histories and are more likely to own assets they can offer as collateral.

As well, a growing number of older households may have gotten access to other sources of income over time. This may have enabled them to start and expand their own business. Increased retirement income from Social Security, for example, may provide those looking for self-employment a growing baseline income and thus reduce the risk of self-employment. Fry et al. (2011) suggest that older adults are advantaged by having inflation-indexed Social Security as the anchor of their annual income streams.

Older self-employed households could have increasingly relied on Social Security as buffer income. Legislative changes that took place in early 2000 reduced earnings tests, allowing older Social Security recipients to earn more money without tax penalties (Burke 2000). This could have incentivized older entrepreneurs to collect Social Security benefits earlier than they otherwise would have, while starting and growing their self-employment business.

Likewise, older households saw disproportionate wealth increases over the past three decades (Fry et al., 2011). That also means that retirement accounts may have generated higher retirement incomes due to the strength of the financial market after 1983 (Phelps et al. 2001).

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[7] CPS data on educational attainment shows this trend over the last 20+ years, namely a marked increase in the percentage of individuals age 55+ having completed 4+ years of college. U.S. Census Bureau (n.d.).

Greater wealth could translate into more self-employment through two channels. First, older households have more assets to use as collateral to finance a start-up or a business expansion. Second, older households could liquidate more of their assets through realized capital gains and realized dividends and interest payments. In both cases these income diversification strategies offer a financial buffer, which would reduce the risk of starting a new venture (i.e. self-employment).

Finally, risk tolerance is an important quality of entrepreneurship. Even though risk tolerance should decrease with age, it may be that the rise in entrepreneurship among older adults reflects a growing willingness among older households to take certain financial risks.[8]

Empirical analysis

Our empirical analysis highlights three separate aspects. First, we look at self-employment trends over time to see whether there is a sustained self-employment growth. Second, we distinguish entrepreneurs from independent contractors to see whether one form of self-employment has grown faster than another. And third, we consider a range of possible factors associated with older self-employment to understand any changes in older self-employment. In the next sections we discuss the data and our variable definitions, followed by a presentation of self-employment trends, and summary data for potential explanations of those trends.

Data and sample

We use the Federal Reserve's triennial Survey of Consumer Finances as our primary data source. The Survey of Consumer Finances (SCF) is the main nationally representative household survey on household wealth, detailing substantial information on all types and amounts of household assets and debt (Bricker et al. 2012). The SCF's detailed information also includes relevant financial variables such as whether a household has been delinquent on any types of bills or if a household's loan application has been denied in the past. The SCF includes detailed data on households' economic situations, specifically on their sources and total amount of income, their employment status, and their health insurance and retirement benefit coverage in their current job, among others. And, the SCF includes a range of household demographic characteristics such as age, marital status, household size, education, ethnicity and race. Most SCF variables are available on a consistent basis dating back to 1989 and we include survey data through 2010, providing us with eight survey years.

Moreover, the SCF allows us to classify older households as working as wage and salary employees, as independent contractors or as entrepreneurs. And, the SCF includes sufficient information to identify heads of households with multiple employment arrangements, which allows us to identify part-time independent contractors and part-time entrepreneurs. And, we can combine information on employment arrangements with information on household income and wealth.

We include all economically active households 50 years and older in our analyses. We use a cutoff of 50 years of age rather than older ages, to preserve sufficiently large samples to explore a range of potential explanations for older entrepreneurship growth. Also, we include retirees and non-retirees because we are especially interested in understanding how older households diversify their income sources, if at all. Many households self-identify as retired but still continue to receive income from wage and salary employment and from self-employment. Including retiree households allows us to better understand the

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[8] The relevant survey question allows households to self-identify with four different options of risk tolerance: substantial willingness, above average willingness, average willingness and unwillingness to accept financial risks.

diversification strategies of older households. Our conclusions are generally not influenced by these sampling decisions.

Older households' employment arrangements and trends

We define three employment arrangements to delineate entrepreneurs from wage and salary employees, and from independent contractors. The SCF offers us two ways to identify employment arrangements. The SCF asks one question on employment status of the head of household – work for somebody else, self-employed, disability, retired, otherwise out of the labor force (ES1). Then the SCF asks a series of questions related to owning a privately held business with fewer than 500 employees (ES2).

We use both approaches – ES1 and ES2 – to identify a household's primary employment arrangement. This provides for some nuance in our analysis since it creates the possibility of overlapping employment arrangements. We start by identifying wage and salary employees as those who indicate that they work for somebody else, using the ES1 approach. We then identify all entrepreneurship households using the ES2 approach. We define entrepreneurs as individuals who say they own and manage a business worth over $5000 (in 2013 dollars), but with fewer than 500 employees (i.e. "small business").

Our entrepreneurship definition is consistent with other parts of the literature and it allows us to separate entrepreneurs from independent contractors.[9] Operationally we set a minimum value of $5,000 (in 2013 dollars) for a business to differentiate entrepreneurs from independent contractors. Finally, we identify individuals as full-time entrepreneurs if (a) they are entrepreneurs by the ES2 definition and (b) if they answered that they were self-employed in the ES1 approach. All other entrepreneurs indicated an employment arrangement other than self-employment in the ES1 approach and we thus consider them part-time entrepreneurs.

Our definition of independent contractors follows from our definition of entrepreneurs in the ES2 approach. Independent contractors are those households, who indicate that they own and manage their own privately held business with fewer than 500 employees, but who also indicate that the business is worth $5,000 or less (in 2013 dollars). [10] Full-time independent contractors are again those who also indicated in the ES1 approach that they are self-employed, while part-time independent contractors are those who chose an employment status other than self-employment in the ES1 approach.

The summary data in Table 1 show two key facts about self-employment among older households. First, entrepreneurship is the fastest growing employment arrangement for households 50 years old and older from 1989 to 2013. And second, the majority of this growth occurs in the latter 15 years, i.e. from 1998 to 2013. Our discussion of factors associated with older self-employment growth consequently focuses on factors related to older entrepreneurship, especially after 1998.

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[9] See, for instance Bitler, Moskowitz & Vissing-Jorgensen (2005) who define entrepreneurs as households that owned and managed private equity, had business net worth of more than zero dollars, and worked positive hours in businesses with positive sales. Other definitions are similar. Cagetti & DeNardi (2006) define entrepreneurship as either owning or managing a privately held business. Gentry & Hubbard, 2000, define entrepreneurs as households that report owning and managing a business with a total net worth of at least $5,000. DeNardi, Doctor & Krane (2007) define entrepreneurs as households who own and manage a business and who self-identify as self-employed. Quadrini (2000) defines entrepreneurs as households who own and manage a business with positive net worth.
[10] Defining entrepreneurship with the available data in the SCF depends to some degree on researchers' discretion. Most studies use owning and managing a private business with fewer than 500 employees as a starting point, but then occasionally add other screens to differentiate entrepreneurs from other self-employed. These screens can include the value of the business or the number of employees. We have chosen a minimum net worth – assets minus debts – of $5,000 as the dividing line between entrepreneurs and independent contractors.

Before examining the factors related to older entrepreneurship, we want to make sure that older entrepreneurship growth is unique to older households. It is possible that the rise in older households' entrepreneurship simply reflects a general population trend in an aging society. We thus calculate the share of all entrepreneurs and of full-time entrepreneurs under our initial definition for the population younger than 50 years. The findings in Table 2 confirm that the rise in entrepreneurship from 1989 to 2010 appears to be a unique phenomenon for older households—it is not matched by similar trends among younger households. In fact, the share of entrepreneurs and full-time entrepreneurs among younger households appears to have dropped off slightly (Table 2).

Variables and data for explanations of older entrepreneurship growth

Our discussion of factors related to self-employment changes below first focuses on whether self-employment growth may be the result of rising economic pressures. Self-employment at any given point in time may be the confluence of a number of past economic and demographic trends. Contemporaneous indicators of economic pressure likely do not appropriately capture the relationship between economic pressures and self-employment. We instead need to rely on other more approximate measures that can capture longer term trends in economic pressures relative to changes in self-employment trends.

Some such proximate indicators may be entrepreneurs' age and related measures. We should observe an increasing age of older entrepreneurs, we should see more older households starting their business at later ages than in the past, and we should see later delayed expected retirement ages than in the past. These indicators all try to capture different aspects of the possibility that older entrepreneurs need to work longer as a result of growing economic pressures. An increasing age of entrepreneurs could reflect growing economic pressures if other factors that could be correlated with age are accounted for, as we discuss next.
An increasing age of older entrepreneurs could reflect something other than growing economic pressures. An increasing age could reflect improving longevity, which is highly correlated with income,[11] race and education. It could also reflect disproportionate wealth gains among older households and growing risk tolerance. We account for all of these factors in our discussion of demographic trends and economic opportunities below.

It is theoretically also possible that economic pressures could lead younger workers to move into self-employment at an earlier age than they otherwise would have. We focus only on older households, so that possible declines in the average age of older entrepreneurs are fairly limited. We also consider trends in entrepreneurship among younger households below to make sure that entrepreneurship growth is unique to older households.

A number of other indicators may also reflect growing economic pressures. We may, for instance, see increasing part-time entrepreneurship as older households seek some measure of income security by diversifying their income away from wage and salary employment. We may also observe an increasing reliance on government transfer income, typically in the form of unemployment insurance. We hence define a dummy variable for receipt of substantial government transfer income; this is coded as '1' if the household received more than $5,000 (in 2013 dollars) in a given year. Further, we should see a rising number of former full-time wage and salary employees become entrepreneurs, as people leave their career employment in search of more economic security in self-employment. This is possible to track because the SCF asks a series of questions about the household's last full-time job, including whether it was in self-employment or working for somebody else. In the same vein, we should see a pattern of flat or declining earnings from previous wage and salary employment for successive cohorts. Instead, earnings

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[11] Recent studies have looked at the link between lifetime earnings and longevity. See, for instance, Bosworth and Burke (2014) and Waldron. (2007).

should increase over time, as wage and salary earnings tend to increase faster than inflation over longer periods of time. An increasing pattern of past earnings of successive cohorts of entrepreneurs hence would suggest no change in the pattern of moving from wage and salary employment to earnings and thus lend no support to the economic pressure hypothesis. But, a flat or even a declining pattern of past earnings of successive entrepreneur cohorts would suggest that earnings pressures may have increased in wage and salary employment, keeping earnings lower than one would expect before households moved into entrepreneurship.

Most definitions of our other explanatory variables are straightforward, but a few require additional explanation. First, we use a threshold of substantial income equal to $5,000 (in 2013 dollars) for a range of different income sources, specifically Social Security, other government transfers, and other annuity/capital income. This helps us understand strategies for income diversification among older households. Second, we use the SCF's question for risk tolerance, which allows respondents to indicate on a four-point scale their willingness to accept financial risk– no risk, average risk, above average risk and substantial risk tolerance. . We combine answers when households indicate that they are willing to accept substantial risk with answers indicating that they are willing to accept above average risk to preserve sufficient observations to allow for robust analyses.

The disproportionate growth among older entrepreneurs after 1998 when the labor market showed greater weaknesses than in the preceding years, may suggest that older households responded to economic pressures by starting and expanding their businesses. We should hence observe concomitant changes in proximate measures for past economic pressures. These include a rising age, a later business starting age and a delayed retirement age for older entrepreneurs. In addition, we may observe increasing part-time entrepreneurship, an increasing reliance on government transfers such as unemployment insurance, a growing share of former full-time wage and salary employees moving into entrepreneurship and limited earnings gains over time of former wage and salary employees moving into entrepreneurship.

Table 3 summarizes most of these trends. Part-time entrepreneurship is already shown in Table 1. And, changes over time in full-time wage and salary earnings that households earned before they moved into entrepreneurship are shown in Figure 1.

None of these trends correlate in any discernible way with older entrepreneurship growth. Take the pattern of past full-time earnings in wage and salary employment, for instance (Figure 1). Generally speaking the previous full-time earnings of entrepreneurs in later survey years tend to be higher than those of entrepreneurs in earlier survey years. Similarly, there is no clear trend of more previous wage and salary employees self-identifying as entrepreneurs over time (Table 3). Also, none of the age related measures show an upward trend and neither do the measures for substantial government transfers income receipt (Table 3). Finally, part-time entrepreneurship shows also no clear upward trajectory (Table 1). Thus, there is nothing to suggest that older entrepreneurship growth responded to rising economic pressures.

Next, we provide summary data for demographic changes among older entrepreneurs in Table 4. Most trends lend little data support to their respective hypotheses. The racial and ethnic diversity of older entrepreneurs remained relatively stable around ten percent (Table 4). The share of single female-headed households among older entrepreneurs in fact was much lower in most years after 1998 than before (Table 4). Although the share of older entrepreneurs with a college degree did grow, that increase was parallel to increases across the entire older population (Table 4).

This leaves us with considering other explanations that may reflect improving opportunities for entrepreneurship – more push factors, including lower credit constraints, more personal wealth as collateral, and greater income diversification from private capital and Social Security. The summary data

suggest that credit constraints – both loan denial rates and delinquency as proxy for creditworthiness – tended to decline from 1995 through 2007, before worsening in 2010 and 2013 (Table 4). Changes in liquidity constraints hence only overlap partially with entrepreneurship growth, which started later and lasted longer (Table 1). This reduction in liquidity constraints likely played only a minor role, if any, in growing older entrepreneurship after 1998.

It is also possible that the stock and housing market booms offered somewhat of a financial injection to start-ups and business expansions. Increasing household wealth could contribute to older entrepreneurship by giving households more assets to collateralize for their own business and greater household wealth could give households more opportunities to generate buffer income unrelated to their business venture.

A simple calculation shows that wealth among older households grew, especially among those households who exhibit the typical characteristics of older entrepreneurs (Figure 2). The typical older entrepreneurial household is married, white and has income in the top quintile of the income distribution (see also Table 4). Among all households 50 years and older, the ratio of this population's median wealth compared to everybody else's wealth was at a low point in 1998 and reached a high point in 2013, with a brief interruption in 2007 (Figure 2). Households that typically make up the overwhelming majority of older entrepreneurship households have seen much sharper wealth increases than all other households, during the same period of time that older entrepreneurship started to grow more rapidly.

How might this be explained? First, older households may have used their growing wealth as collateral for their business. The share of older entrepreneurs, who used their private assets as collateral, hit a low point in 1998 with 16.5 percent and trended upward in subsequent years (Table 4). The median amount of collateral also hit close to low point with a real amount of $57,181 (in 2013 dollars) in 1998 and trended upwards in subsequent years, hitting a record median amount of $200,000 in 2013. Increasing access to and growing amounts of private assets as collateral seems to correlate with the pronounced rise of older entrepreneurship from 1998, after collateralization fell alongside the wealth ratio shown in Figure 2 before 1998.

Second, older entrepreneurs may have also increasingly relied on capital income – capital gains and interest and dividend income. We specifically calculate the share of older entrepreneurs with substantial capital gains income and those with substantial interest and dividend income, defined as more than $5,000 (in 2013 dollars). Our calculations – not detailed here – show that older entrepreneurs have a higher likelihood of receiving either of these forms of capital income, compared to for wage and salary employees. But, there is no discernible growth among older entrepreneurs receiving substantial capital income (Table 4). Typically more than 10 percent of older entrepreneur had substantial capital gains income and more than one-fourth had substantial interest and dividend income in any year. That is, capital income is an important aspect of older entrepreneurial household finances, but the increasing availability of capital income does not appear to be correlated with older entrepreneurship growth after 1998.

In a similar vein, we consider annuity receipts from Social Security, pensions and life insurance policies as a possible income diversification source for older entrepreneurs. Both the share of entrepreneurs with annuity income and the median amount of annuity income have trended upwards, especially after hitting a low point in 1995. Less than one-third of older entrepreneurs received annuity income in 1995 and this share grew to 41.1 percent in 2010. The median real amount of annuity income was $14,563 in 1995 and it increased to $24,799 by 2010 (Table 4). The trends in annuity income among older entrepreneurs show somewhat of an upward trend from 1995 onwards after no clear trend in the preceding years. That is, the annuity trends could serve as an explanation for the rise of older entrepreneurship during the later years.

Multivariate regression analysis of synthetic cohort model

Our summary data suggest that increasing household wealth and a greater availability of Social Security benefits played critical contributing factors to older entrepreneurship growth after 1998. Having more wealth seemed to have increased collateralization to fund start-ups and business expansions, while a disproportionately growing number of older entrepreneurs also heavily rely on capital income. Furthermore, Social Security and other annuity income appear to have played an increasingly important role in helping older entrepreneurs diversify their income.

We simultaneously test these relationships with a regression model. Our data set is a cross-sectional data set, which requires us to build synthetic cohorts by averaging invariant variables—specifically age, race, educational attainment and survey year—to allow for comparisons over time. That is, we compare group averages for similarly situated households between two different periods to estimate the effects of key variables on the average probability of being an entrepreneur.

Our dependent variable is the average share of full-time entrepreneurs in the relevant population in a given survey years. Our summary data in Table 1 has shown that older entrepreneurship growth largely reflected growth among full-time entrepreneurs. But, our dependent variable – average share of full-time entrepreneurs for specific groups – no longer allows us to distinguish between the three alternative employment arrangements – wage and salary employees, independent contractors and out of the labor force.

We focus our analysis of the coefficient estimates especially on the correlation between wealth and capital income and full-time entrepreneurship. The key explanatory variables are:
- the average real wealth for the same group lagged by three years
- the lagged value of its share of households with substantial capital gains income
- the lagged value of its share of households with substantial interest and dividend income
- the contemporaneous value of its share of households with substantial Social Security and annuity income
- the contemporaneous value of its share of households with substantial government transfer and other income.

Lagging the values of wealth and capital income avoids the endogeneity between entrepreneurship and wealth. We further include the average share of married couples and the average share of single female headed households in our baseline regression model.

We do not include an additional control variable for age since the average shares of the synthetic cohorts are already averaged over five 10-year age groups and thus control for age. Our baseline model consequently includes all households.

We add one more regression model to test possible changes over time. We add a dummy variable that takes on the value of one for the years from 2001 to 2013 and zero otherwise. And, we interact the substantial income variables – capital gains, interest and dividend income and Social Security and other annuity income – with this time period since there are a priori reasons to believe that the effect of these variables may have differed over time. We expect that the effect of capital income and Social Security income on the chance of being an entrepreneur increases over time.

Table 5 contains our two regression estimates, using a Tobit model since the dependent variable – average share of full-time entrepreneurs -- is censored at zero and one. Our parameter estimates show several important findings. First, capital income, specifically interest and dividend income, is statistically significant, while real wealth is not, in determining the average full-time entrepreneurship share (Table 5).

11

Hence, our findings suggest that capital income is more important for full-time entrepreneurs than having access to wealth as collateral. Second, the effect of interest and dividend income on full-time entrepreneurship goes up when we add a time dummy for the later time period from 2001 to 2013. This may reflect the increased availability of assets to be liquidated for business purposes. Third, Social Security and annuity income lowers full-time entrepreneurship, possibly increasing the movement into other employment arrangements. But, this effect becomes statistically insignificant when we add time period controls. This may suggest that the growing value of Social Security as an income diversification tool due to the elimination of the earnings test may have posed less of an impediment to entrepreneurship over time. The bottom line from these results is that being able to diversify household income appears to strengthen entrepreneurship.

Conclusion

The increase in entrepreneurship among those who are 50 or more years old is a surprising trend that accelerated after 1998 and that has held steady through the Great Recession and into 2013. Our research suggests that this growth likely resulted from the confluence of a few beneficial but unique trends. Most notably, entrepreneurship increased after 1998 when the importance of interest and dividend income also increased. Likewise, part of the time period from 2001 to 2013 was characterized by higher than normal interest rates, as well as more dividend payouts, and several run ups in the stock market and the housing market. These economic trends were the result of a unique confluence of factors which are unlikely to be repeated. If these have indeed helped cause the increase in older entrepreneurship, that increase may slow down in future years.

Our study shows that the growth in older entrepreneurship reflects the availability of financial opportunities, i.e. pushes in the form of substantial income sources unrelated to the new business venture. It turns out that those households which most benefitted from the run-up in household wealth over the past 10 years, are the ones that typify older entrepreneurs. These are the small share of older households which found strategies to diversify their income. Thus, older entrepreneurship growth could easily slow again as those households, who saw disproportionate wealth gains, have already taken advantage of these opportunities and moved into entrepreneurship. And, older entrepreneurs may have taken advantage of changing rules related to earning additional money while receiving Social Security benefits. This result of our analysis is more tentative, but it again suggests that income diversification matters for older entrepreneurship. The implication here is that policymakers wanting to create more meaningful self-employment opportunities for older households may want to consider ways to help households diversify their incomes. The main takeaway from our research is that there is room for policy to increase the attractiveness of self-employment for older households.

Appendix

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Tables

Table 1: Employment arrangements of households 50 years old and older, 1989 to 2013

Year	Entrepreneur			Independent contractor				Self-identified workforce status			
	All	Full time entrepreneur	Part-time entrepreneur	All	Full-time independent contractor	Part-time independent contractor	Self-employed (full-time entrepreneurs and full-time independent contractors)	Work for somebody else	Retired	Disabled	Otherwise out of labor force
1989	7.0%	5.2%	1.9%	6.2%	5.5%	0.6%	10.7%	32.2%	40.1%	13.9%	3.1%
1992	8.9%	5.0%	3.9%	5.3%	4.2%	1.0%	9.2%	30.7%	42.3%	14.3%	3.5%
1995	8.4%	5.1%	3.3%	5.9%	4.9%	1.0%	10.0%	31.3%	42.5%	13.0%	3.2%
1998	8.6%	5.8%	2.7%	7.3%	6.0%	1.3%	11.8%	34.1%	43.2%	8.1%	2.7%
2001	10.1%	6.9%	3.2%	6.9%	5.9%	1.1%	12.8%	36.7%	40.8%	7.2%	2.4%
2004	10.0%	6.9%	3.1%	7.5%	6.0%	1.5%	12.9%	37.5%	38.3%	9.2%	2.1%
2007	10.0%	6.9%	3.1%	4.6%	3.4%	1.3%	10.2%	39.7%	39.1%	8.2%	2.7%
2010	13.2%	9.1%	4.1%	6.2%	4.8%	1.4%	13.9%	37.3%	36.2%	8.6%	4.0%
2013	9.8%	7.3%	2.5%	5.1%	3.7%	1.4%	11.0%	38.0%	38.9%	8.9%	3.3%

Notes: Authors' calculations based on Board of Governors, Federal Reserve System. Various years. Survey of Consumer Finances. Washington, DC: BOG. Inflation-adjustments are based on the Bureau of Labor Statistics. (2012). Consumer Price Index for Urban Consumers, Research Series (CPI-U-RS). Washington, DC: BLS. All figures are expressed as share of the total population. The totals across employment categories add to more than 100 percent since part-time entrepreneurs and part-time independent contractors also self-identify as something other than self-employed. The shares add to 100 percent if these two categories are excluded. Entrepreneurs are defined as those who own and manage a business that is worth at least $5,000 (in 2013 dollars). Full-time entrepreneurs are defined as those entrepreneurs, who also self-identify as self-employed, while part-time entrepreneurs are those, who self-identify with another work status -- working for somebody else, retired, disabled or out of the work force. Independent contractors are those households, who own and manage a business worth less than $5,000 (in 2013 dollars). Full-time independent contractors also self-identify as self-employed and part-time independent contractors self-identify a different work status. All categorization based on survey answers for the head of household, when head of household is 50 years old or older.

Table 2: Shares of households younger than 50 years who are entrepreneurs or full-time entrepreneurs, 1989 to 2013

	Entrepreneur	Full-time entrepreneur
Average annual change 1989 to 2013	-0.04%	-0.01%
Average annual change 1989 to 1998	0.01%	0.09%
Average annual change 1998 to 2013	-0.07%	-0.06%
1989	10.0%	6.2%
1992	10.4%	6.9%
1995	8.9%	5.4%
1998	10.1%	7.0%
2001	9.7%	6.4%
2004	9.3%	5.9%
2007	9.6%	6.2%
2010	9.9%	7.4%
2013	9.0%	6.0%

Notes: Authors' calculations based on Board of Governors, Federal Reserve System. Various years. Survey of Consumer Finances. Washington, DC: BOG. Inflation-adjustments are based on the Bureau of Labor Statistics. (2012). Consumer Price Index for Urban Consumers, Research Series (CPI-U-RS). Washington, DC: BLS. All figures are expressed as share of the total population. Entrepreneurs are defined as those who own and manage their own business with 500 or fewer employees and who own a business worth at least $5,000 (in 2010 dollars). Full time entrepreneurs are entrepreneurs, who also self-identify as self-employed. All categorization based on survey answers for the head of household, when head of household is younger than 50 years.

Table 3: Trends for economic pressure proxies

Year	Average age of older entrepreneurs	Share of older entrepreneurs, who started business after age 50	Average expected years to retirement	Share of part-time entrepreneurs as share of older population	Share of older entrepreneurs, who also receive substantial income from government transfers (unemployment insurance) and similar sources	Average share of older entrepreneurs, whose longest last job (lasting at least five years) was working for somebody else
Average annual change 1989 to 2010	0.0%	0.0%	-0.02%	0.0%	0.5%	-0.1%
Average annual change 1989 to 1998	-0.2%	0.4%	-0.01%	0.1%	0.2%	0.3%
Average annual change 1998 to 2013	0.1%	-0.3%	-0.03%	0.0%	0.7%	-0.4%
1989	60.7	29.0%	12.9	1.9%	3.5%	62.0%
1992	60.4	36.1%	15.0	3.9%	11.7%	59.4%
1995	59.4	29.0%	12.9	3.3%	12.4%	61.7%
1998	59.9	32.7%	12.9	2.7%	5.5%	65.0%
2001	59.7	31.3%	13.1	3.2%	9.0%	55.2%
2004	60.0	35.9%	13.7	3.1%	6.0%	65.6%
2007	59.6	30.8%	11.6	3.1%	9.3%	61.7%
2010	60.9	29.1%	12.4	4.1%	14.7%	59.9%
2013	60.8	27.9%	12.4	2.5%	15.4%	59.1%

Notes: Authors' calculations based on Board of Governors, Federal Reserve System. Various years. Survey of Consumer Finances. Washington, DC: BOG. All categorization based on survey answers for the head of household, when head of household is 50 years old or older. All data calculated for entrepreneurs, who are 50 years old and older. Entrepreneurs are those who own and manage their own business and the business is worth at least $5,000 in 2013 dollars. Households can identify the year when they expect to retire. Part of the answer includes "less than one year" and "never stop" working. "Less than one year" is set equal to 0.5 years and "never stop" is equal to an assumed average life expectancy of 85 years minus the actual age of the head of household. The expected years to retirement are equal to the indicated year minus the survey year.

Table 4: Alternative explanations for entrepreneurship growth

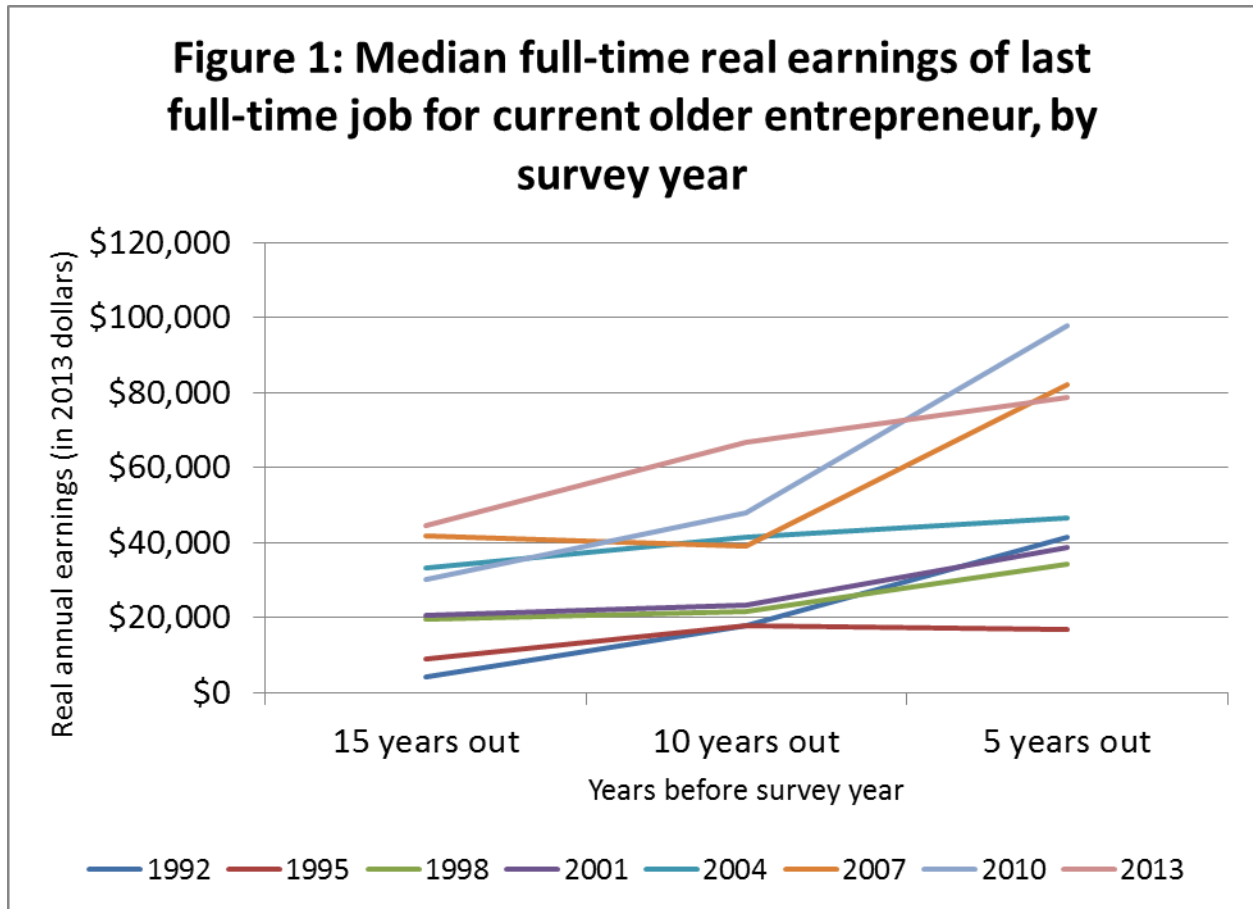| Year	Share of non-white or Hispanic EP out of all older EP	Share of single women out of all older EP	Share of EP with college degree	Share of all older HH with college degree	Share of EP who applied for and were denied a loan	Share of EP who delinquent on any bill in the past	Share of EP using private assets as collateral	Median amount of collateral if EP used private assets as collateral	Share of EP with substl. capital gains income	Share of EP with substl. interest and dividend income	Share of EP with Social Security and other ret. income	Median Social Security and other ret. income if EP had such income	Share of EP with substantial or above avg. risk tolerance	Share of non-EP in the workforce with substantial or above avg. risk tolerance
Avg. annual change 1989 to 2010	0.1%	-0.1%	1.0%	0.6%	0.1%	0.1%	-0.3%	3.3%	0.0%	-0.6%	0.5%	35.2%	0.4%	0.3%
Avg. annual change 1989 to 1998	0.2%	0.0%	1.2%	0.9%	0.0%	0.1%	-1.3%	-5.1%	0.3%	-1.5%	0.7%	39.1%	0.5%	1.1%
Avg. annual change 1998 to 2013	0.1%	-0.2%	0.8%	0.4%	0.1%	0.0%	0.3%	8.3%	-0.2%	-0.1%	0.4%	-2.9%	0.4%	-0.1%
1989	7.8%	9.6%	36.4%	21.8%	8.8%	2.4%	28.3%	90,379	14.1%	41.0%	29.1%	19,662	21.0%	8.8%
1992	14.1%	8.6%	40.5%	25.4%	10.8%	3.0%	31.2%	53,617	8.2%	28.1%	35.1%	17,073	18.6%	12.3%
1995	9.4%	9.0%	33.6%	24.0%	7.6%	3.7%	25.6%	75,894	14.4%	28.3%	31.0%	15,607	18.1%	13.8%
1998	9.6%	9.4%	47.6%	30.2%	8.6%	3.7%	16.5%	57,181	17.2%	27.3%	35.5%	19,111	25.3%	18.4%
2001	9.8%	5.0%	56.1%	32.8%	7.5%	3.1%	18.2%	65,661	10.9%	24.0%	34.2%	20,813	26.0%	22.1%
2004	8.7%	11.1%	53.1%	35.8%	3.8%	2.5%	18.0%	123,314	10.3%	27.0%	36.2%	26,006	30.2%	17.5%
2007	10.6%	5.7%	56.3%	34.0%	4.5%	2.5%	25.8%	99,929	17.9%	30.0%	33.1%	27,382	30.6%	18.2%
2010	12.7%	7.7%	53.6%	37.4%	10.6%	4.9%	22.2%	107,170	9.4%	27.0%	40.3%	26,577	22.7%	17.0%
2013	10.4%	6.4%	59.3%	36.6%	10.0%	3.9%	20.8%	200,000	14.5%	26.3%	42.2%	27,790	30.6%	16.2%

Notes: Authors' calculations based on Board of Governors, Federal Reserve System. Various years. Survey of Consumer Finances. Washington, DC: BOG. All categorization based on survey answers for the head of household, when head of household is 50 years old or older. All data calculated for entrepreneurs, who are 50 years old and older. Entrepreneurs are those who own and manage their own business and the business is worth at least $5,000 in 2013 dollars. Loan denial requires that household has applied for a loan. Households can identify the year when they expect to retire. Part of the answer includes "less than one year" and "never stop" working. "Less than one year" is set equal to 0.5 years and "never stop" is equal to an assumed average life expectancy of 85 years minus the actual age of the head of household. The expected years to retirement are equal to the indicated year minus the survey year. EP stands for older entrepreneur and HH stands for households.

Table 5: Regression estimates for synthetic cohort models of entrepreneurship share out of specific population groups

|	(1) Baseline	(2) Late period dummy and interaction terms
Share of entrepreneurs (lagged)	0.2099***	0.2220***
	(0.0724)	(0.0727)
Real wealth (lagged)	0.0000	0.0000
	(0.0000)	(0.0000)
Share of households with substantial capital income (lagged)	0.0033	-0.2714
	(0.1258)	(0.2313)
Share of households with substantial interest and dividend income (lagged)	0.1210*	0.1986**
	(0.0720)	(0.0898)
Share of households with substantial Social Security income	-0.0354**	-0.0366
	(0.0176)	(0.0283)
Share of households with substantial government transfer income	-0.0225	-0.0316
	(0.0397)	(0.0397)
Share of households who are married	0.0357	0.0345
	(0.0430)	(0.0430)
Share of households who are headed by single women	-0.1598***	-0.1600***
	(0.0477)	(0.0476)
Interaction of share of HH with substantial capital gains income (lagged) and late period		0.3442
		(0.2852)
Interaction of share of HH with substantial interest and dividend income (lagged) and late period		-0.0831
		(0.1539)
Interaction of share of HH with substantial Social Security income and late period		-0.0049
		(0.0340)
Dummy for late period (2001 to 2013)		0.0190
		(0.0130)
N	550	550
Chi-squared	106.7	112.8
p-value	0	0

Notes: All estimates based on Tobit regression models. Dependent variable is the share of full-time entrepreneurs out of a narrowly defined population group, delineated by time-invariant characteristics such as age, race, education and survey year. * denotes significance at 10% level, ** denotes significance at 5% level and *** denotes significance at 1% level.

Figures

Figure 1: Median full-time real earnings of last full-time job for current older entrepreneur, by survey year

Notes: All amounts reflect annual full-time real earnings during the last year, in which household held full-time job working for somebody else. Real earnings calculated in 2013 dollars using CPI-U-RS. Source is Bureau of Labor Statistics. 2014. Consumer Price Index for Urban Consumers, Research Series. Washington, DC: BLS. Calculations for all entrepreneurs 50 years old and older in a survey year.

Figure 2: Ratio of median wealth of "typical" entrepreneur household to all others, by year
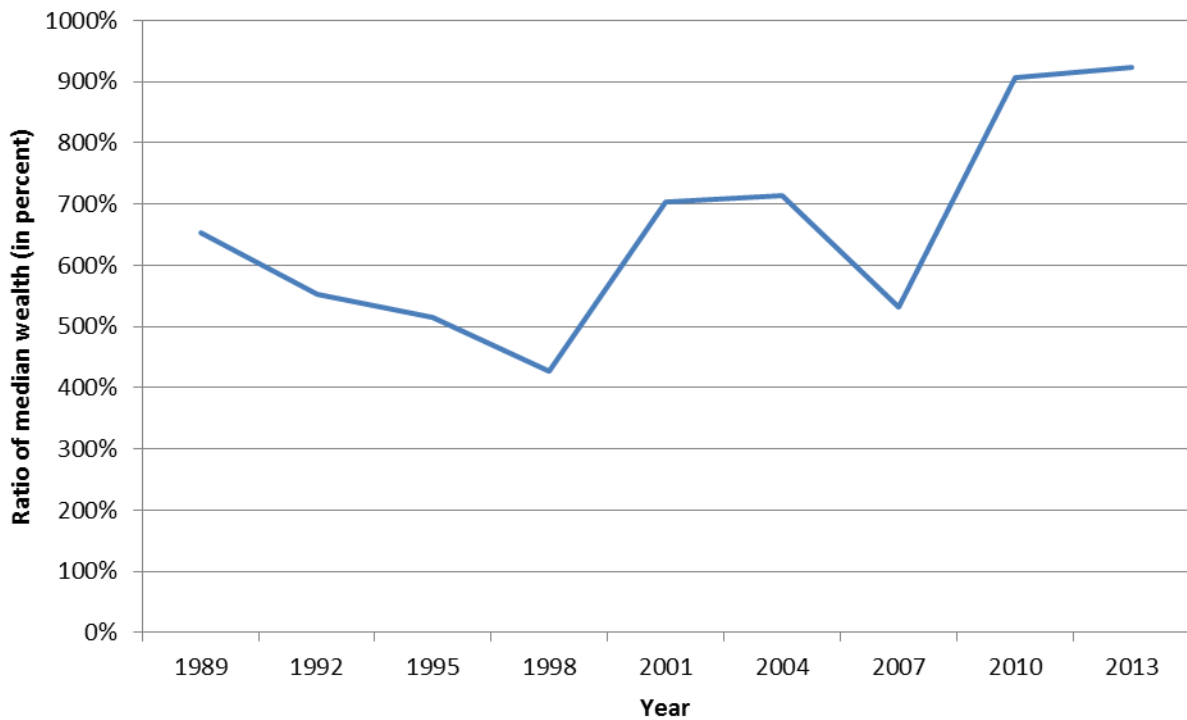
Notes: All figures are median marketable wealth for households 50 years old and older. "Typical" entrepreneurial type households are married, white and have income in the top quintile.